

IN THE CLAIMS

49. (New) A method of manufacturing a memory module comprising the steps of:

providing first semiconductor devices each having a DRAM semiconductor chip and protruded terminals arranged over the DRAM semiconductor chip;

providing a second semiconductor device having a package body, a nonvolatile memory semiconductor chip sealed in the package body and outer leads protruding outwardly from a side surface of the package body;

providing a module board having first terminals and second terminals; and

mounting the first semiconductor devices and the second semiconductor device on the module board,

wherein, the mounting step is performed such that the protruded terminals of the first semiconductor devices are arranged between the DRAM semiconductor chips of the first semiconductor devices and the module board in a sectional view and arranged at the inside of the DRAM semiconductor chips of the first semiconductor devices in a plan view, and the protruded terminals of each of the first semiconductor devices are soldered to the first terminals of the module board; and such that the outer leads of the second semiconductor device

are soldered to the second terminals of the module board at the outside of the package body in the plan view.

50. (New) A method of manufacturing a memory module according to claim 49, wherein in the mounting step, the protruded terminals are arranged in rows and columns between each of the DRAM semiconductor chips of the first semiconductor devices and the module board.

51. (New) A method of manufacturing a memory module according to claim 49, wherein each of the outer leads of the second semiconductor device is exposed to the air between the package body and a portion of the outer leads that connect to the second terminals.

52. (New) A method of manufacturing a memory module according to claim 49,
wherein each of the DRAM semiconductor chips of the first semiconductor devices has a main surface and bonding electrodes on the main surface, and
wherein the protruded terminals are arranged over the main surface and electrically connected to the bonding electrodes.

53. (New) A method of manufacturing a memory module according to claim 52, wherein the mounting step is performed so that the main surfaces of the DRAM semiconductor chips of the first semiconductor devices face the module board.

54. (New) A method of manufacturing a memory module according to claim 49, wherein in the mounting step, a back surface of the DRAM semiconductor chip of each of the first semiconductor devices is exposed.

55. (New) A method of manufacturing a memory module according to claim 49, further comprising the step of sealing a space between each of the first semiconductor devices and the module board with resin.

56. (New) A method of manufacturing a memory according to claim 49, wherein all protruded terminals of each of the first semiconductor devices are arranged between the corresponding semiconductor chip of the corresponding first semiconductor device and the module board.

57. (New) A method of manufacturing a memory module according to claim 49, wherein the nonvolatile memory

semiconductor chip of the second semiconductor device is a nonvolatile read-only memory.

58. (New) A method of manufacturing a memory module according to claim 49, wherein the nonvolatile memory semiconductor chip of the second semiconductor device is an EEPROM.

59. (New) A method of manufacturing a memory module according to claim 49,

wherein the mounting step includes the steps of arranging the first semiconductor devices and the second semiconductor device on the module board, and the simultaneously soldering the first semiconductor devices and the second semiconductor device to mount them on the module board.

60. (New) A method of manufacturing a memory module according to claim 49, wherein a number of the first semiconductor devices is larger than that of the second semiconductor device on the module board.

61. (New) A method of manufacturing a memory module according to claim 49,

wherein the DRAM semiconductor chips of the first semiconductor devices each have bonding electrodes, and

wherein a minimum pitch of the bonding electrodes is larger than a minimum pitch of the protruded terminals of the respective first semiconductor device.

62. (New) A method of manufacturing a memory module according to claim 49, wherein the mounting step includes the step of soldering the outer leads of the second semiconductor device to the second terminals.

63. (New) A method of manufacturing a memory module comprising the steps of:

providing first semiconductor devices each having a DRAM semiconductor chip and protruded terminals arranged over the DRAM semiconductor chip;

providing a second semiconductor device having a package body, an EEPROM semiconductor chip sealed in the package body, and outer leads which are external terminals protruding outwardly from side surface of the package body;

providing a module board having first terminals and second terminals; and

mounting the first semiconductor devices and the second semiconductor device on the module board,

wherein the mounting step includes the steps of arranging the protruded terminals between the DRAM semiconductor chips of the first semiconductor devices and the module board, and soldering the protruded terminals of each of the first semiconductor devices on the first terminals of the module board, and

wherein the mounting step further includes the steps of connecting the outer leads of the second semiconductor device to the second terminals of the module board at the outside of the package body.

64. (New) A method of manufacturing a memory module according to claim 63, wherein in the mounting step, the protruded terminals are arranged in rows and columns between each of the DRAM semiconductor chips of the first semiconductor devices and the module board.

65. (New) A method of manufacturing a memory module according to claim 63, wherein each of the outer leads of the second semiconductor device is exposed to the areas between the package body and a portion of the outer leads that connect to the second terminals.

66. (New) A method of manufacturing a memory module according to claim 63,

wherein each of the DRAM semiconductor chips of the first semiconductor devices has a main surface and bonding electrodes on the main surface, and

wherein the protruded terminals are arranged over the main surface and electrically connect to the bonding electrodes.

67. (New) A method of manufacturing a memory module according to claim 66, wherein the mounting step is performed so that the main surfaces of the DRAM semiconductor chips of the first semiconductor devices face the module board.

68. (New) A method of manufacturing a memory module according to claim 63, wherein in the mounting step, a back surface of the DRAM semiconductor chip of each of the first semiconductor devices is exposed.

69. (New) A method of manufacturing a memory module according to claim 63, further comprising the step of sealing a space between each of the first semiconductor devices and the module board with resin.

70. (New) A method of manufacturing a memory module according to claim 63, wherein all protruded terminals of each of the first semiconductor devices are arranged between the corresponding DRAM semiconductor chip of the corresponding first semiconductor device and the module board.

71. (New) A method of manufacturing a memory module according to claim 63,

wherein the mounting step includes the steps of arranging the first semiconductor devices and the second semiconductor device on a module board, and then simultaneously soldering the first semiconductor devices and the second semiconductor device to mount them on the module board.

72. (New) A method of manufacturing a memory module according to claim 63, wherein a number of the first semiconductor devices is larger than that of the second semiconductor device on the module board.

73. (New) A method of manufacturing a memory module according to claim 63,

wherein the DRAM semiconductor chips of the first semiconductor devices each have bonding electrodes, and

wherein a minimum pitch of the bonding electrodes is larger than a minimum pitch of the protruded terminals of respective first semiconductor device.

74. (New) A method of manufacturing a memory module according to claim 63, wherein the mounting step includes the step of soldering the outer leads of the second semiconductor device to the second terminals.